

24 JUN 1974

MEMORANDUM FOR THE UNITED STATES INTELLIGENCE BOARD

SUBJECT: Planning for Conversion to Metric System  
for Intelligence Reporting

REFERENCES: a. Report of the USIB Metric Panel,  
USIB-D-27.812, 25 February 1974  
b. Memorandum for Holders, USIB-D-27.812,  
14 March 1974

1. Because of the recent setback in the legislation to commit the United States to a program of conversion to a metric system of units, the USIB Metric Panel has decided to postpone the deadline for completion of metric planning. Our best estimate now is that metric legislation will not be enacted before next year. Therefore, please submit your plans to the Metric Panel by March 1975 rather than mid-September 1974 as implied in the references.

2. The Panel recently has sought the advice of [redacted] concerning the conversion to the metric system of units in intelligence reporting. These [redacted] already are in the process of converting to the metric system. We believe that they will be able to warn us of troublesome parts of the conversion process so that we can avoid them or at least make them less of a nuisance.

[redacted]  
STAT

[redacted]  
Chairman  
USIB Metric Panel

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OSI/PSTD [redacted] (21 Jun 74)

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*Report of the Metric Panel*

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February 1974

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1 February 1974

MEMORANDUM FOR THE UNITED STATES INTELLIGENCE BOARD

SUBJECT: Report of USIB Metric Panel

REFERENCE: USIB-D-27.8/1 6 August 73

1. As directed by USIB on 6 August 1973, this report was prepared to determine the desirability and impact of converting to the metric system of units for intelligence reporting (Appendix A). The USIB Metric Panel considered the impact on intelligence collection and production components and on their customers but made no attempt to consider the impact on components which develop or use hardware even though such hardware may later be built to metric specifications. The attached discussion and appendices present an account of the panel's activities and analyses.

2. The term metric system as used throughout this report refers to the International Metric System, which is defined in Appendix B. The term customary system refers to the system of units commonly used today in the United States.

3. The principal findings of the USIB Metric Panel:

a. The United States is the only major country which has not officially adopted or committed itself to the adoption of the metric system. (Figure 1)

b. During recent and present Congresses, legislation has been introduced in both Houses to commit the United States to a 10-year program for conversion to the metric system. The legislation would encourage more rapid conversion but all action would be on a voluntary basis. Support for the bill is increasing and it is likely that the legislation will be enacted during the present or next one or two sessions of the Congress.

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SUBJECT: Report of USIB Metric Panel

c. A large and increasing number of industrial organizations in the United States, especially those involved heavily with international operations, are moving rapidly on their own toward adoption of the metric system. The cost of conversion seems to be justified by future savings.

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d. Considerable and increasing use of the metric system is now being made within the Intelligence Community. For example, [redacted] reports quantities only in metric units if received in that system of units. Some producers of finished intelligence, especially those in the scientific and technical field, now use metric or dual units (metric and customary) in some of their publications.

e. The collector, the producer of intelligence, and the producer of finished intelligence should have no significant problem in converting to the metric system within a reasonable period of time. The big problem will be to gain acceptance and understanding by consumers. Of course, all organizations will encounter problems during the conversion period and incur some expense.

f. Twenty-seven U.S. Government intelligence-user organizations were polled informally to determine expected advantages and disadvantages from conversion to the metric system by the Intelligence Community. (Appendix C) Twenty-five of these 27 organizations responded. With the exception of one component of one organization, each organization believed that the advantages far outweighed the disadvantages and many believed that the conversion should take place almost immediately.

g. Certain customary units, for example, nautical mile and barrel/day are well established in international usage and no doubt will continue to be used.

4. The USIB Metric Panel recommends that:

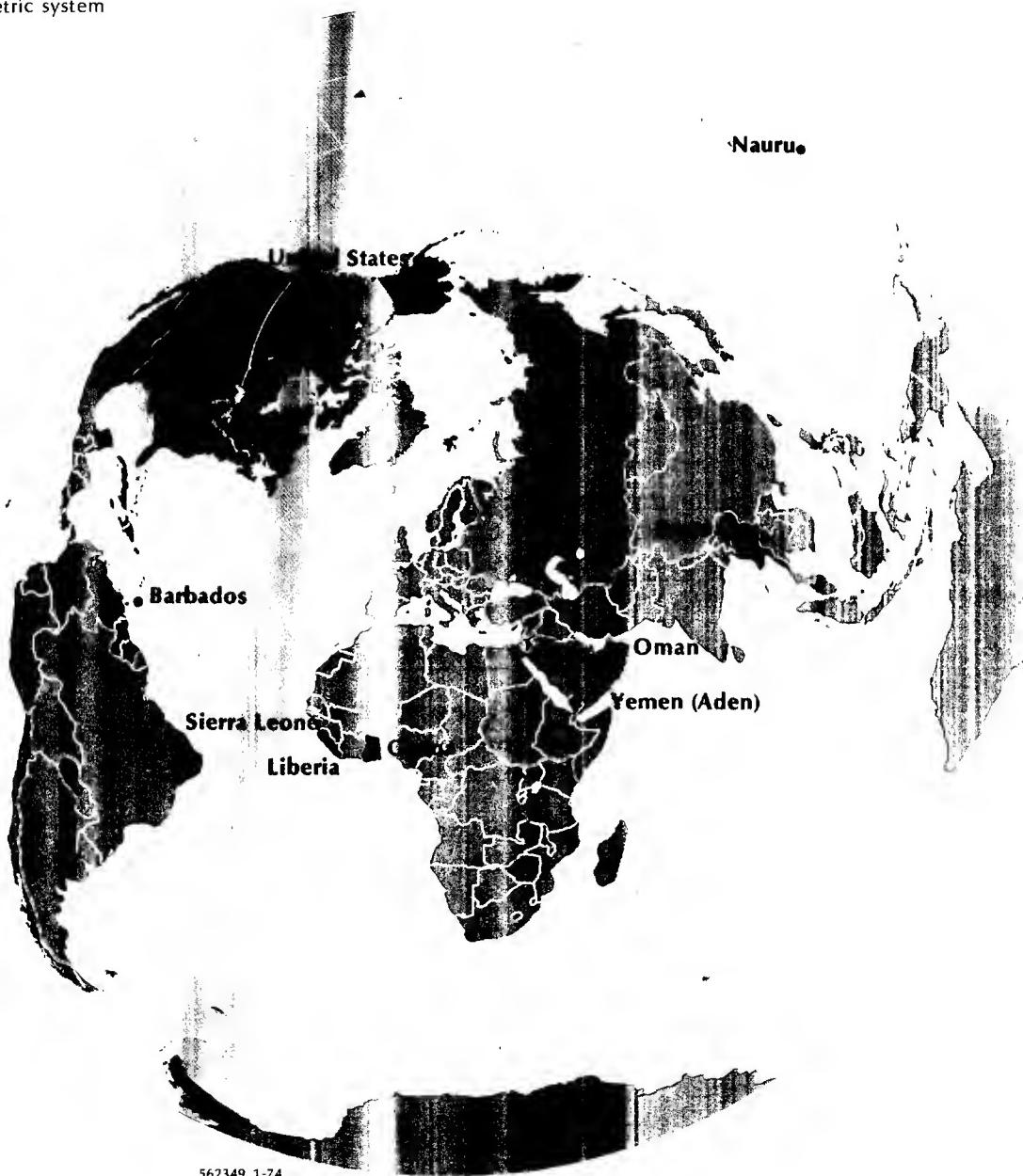
a. The Intelligence Community should begin using the metric system almost immediately after

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## Islands in a Metric World

Figure 1

■ Uncommitted to metric system



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enactment of the metric conversion legislation. The Intelligence Community should prepare now to implement promptly the legislation.

b. Almost immediately after enactment of legislation, Intelligence Community reporting which is now largely in customary units should be reported in metric units with customary units in parentheses. In those cases where reporting is now exclusively in metric units, no change should take place.

c. Certain customary units, such as the nautical mile and barrel/day, should continue in use with no metric equivalent. Such exclusions as well as all metric units should be consistent with those to be set forth by the Department of Commerce for national use.

d. Each component of the Intelligence Community should begin now to plan for conversion to the metric system. The planning period should last no longer than six months. The plan should include a program for training personnel as may be necessary to meet the objectives of dual and metric reporting. In most cases this training should be carried out within a period of not more than two months immediately following enactment of legislation. The amount of

#### Projected Schedule for Intelligence Community Conversion to the Metric System

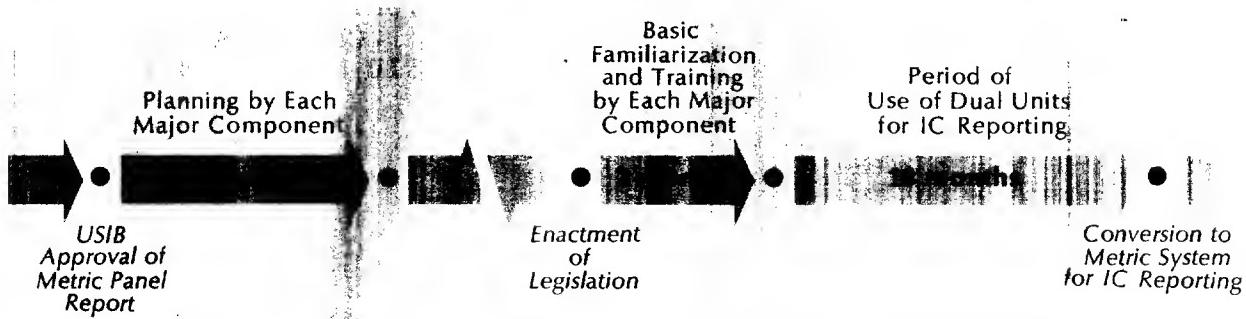


Figure 2

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*Note: Each period represents the maximum time that should be required.*

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SUBJECT: Report of USIB Metric Panel

training required for each individual should not normally take more than a few days to provide sufficient familiarization for the beginning of dual reporting. Complete familiarization with the metric system will naturally require considerable time and effort.

e. The period of dual reporting should be no longer than about 18 months; only in exceptional cases should this period be exceeded. Standard conversion charts should be made available for those who would find them useful. Each component of the Intelligence Community should take steps to determine when its consumers might accept the use of metric units alone.

f. Where planning and training assistance are needed, the panel recommends that each organization make contact with the Metric Information Office, National Bureau of Standards.

g. The Metric Panel should remain in being so that it may monitor the planning for and implementation of the use of the metric system in the Intelligence Community. It is expected that the panel will not meet regularly but only on an ad hoc basis as required.



Chairman  
USIB Metric Panel

Attachment: a/s

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Report of USIB Metric Panel

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DISCUSSION

Introduction

The United States is the only major country which has not officially adopted or committed itself to the adoption of the metric system. Such isolation from the remainder of the world has become increasingly awkward and costly as multinational corporations have proliferated and international trade has expanded. Many major industrial organizations on their own have adopted the metric system for part of their operations. Momentum is building toward the passage of legislation which would commit the United States to a 10-year program for conversion to the metric system and some state legislatures have already authorized their state school systems to teach the metric system.

Certain components of the Intelligence Community (IC) use the metric system today in parts of their reporting. This use has increased over the years as the advantages of the system have become recognized more widely and as more persons have become familiar with the system. Target countries use the metric system; therefore, most of the raw intelligence contains metric units and conversion to the customary system is an added chore that can lead to inaccuracies.

The likelihood that the United States will adopt the metric system makes it most desirable that a plan be devised for community-wide conversion to the metric system. There seems little question that the IC will convert to the metric system, the only significant questions are when the conversion should take place and how it should be implemented.

Approach to the Problem

The proposed U.S. conversion to the metric system has been spearheaded by the Department of Commerce, and the National Bureau of Standards was given responsibility to prepare an extensive and detailed plan for such conversion, which it has submitted to the Congress. Almost at the outset, the USIB Metric Panel felt strongly that whatever the IC does in converting to the metric system should be synchronized with the U.S. conversion and should be modeled after it.

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In order that the panel would profit from the excellent work by the Metric Study Group of the National Bureau of Standards, a member of that group served as a consultant to the panel. He met regularly with the panel and provided important inputs.

The panel members themselves as representatives of their respective organizations were mostly producers rather than users of intelligence -- and many were scientifically or technically oriented. The need for a much broader base of information than that afforded by the panel was recognized and opinions were obtained in writing from all major producers and consumers of intelligence concerning the advantages and disadvantages each organization might expect from IC conversion to the metric system for intelligence reporting. (Appendix C) In all cases the requests solicited only informal opinions. Most replies were from persons sufficiently high in each organization to give representative feelings. Although many replies were from organizations which are generally considered to be customers of the IC, none were from persons of cabinet or subcabinet rank. Therefore, the potential impact of the conversion on such high-level individuals is not yet known and clearly must be considered.

One major unit of the Intelligence Community (NPIC) made a unilateral decision in 1969 to convert to metric reporting exclusively, later modified to metric/customary reporting. In 1973 the plan was abandoned and reporting is now generally in customary units only. The experience of NPIC was examined in detail by the panel. (Appendix D)

#### Impact on the Intelligence Community

The use of the metric system within the IC is not new. Various components have used metric units in reports for many years. For example, the [redacted]

[redacted] reports only in the units received and, of course, [redacted] are from countries which use the metric system. The Office of Weapons Intelligence and the Office of Scientific Intelligence, CIA, frequently use metric units in their reporting although there is no set policy toward such use. The Defense Intelligence Agency frequently uses metric units, especially in its scientific and technical reports. The National Security Agency converts metric units to customary units and presents both in their reports. Such dual reporting has been in use for several years and has presented no problem to NSA.

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A sudden change from exclusive use of customary units to metric units should be avoided because it would be too much of a shock for much of the IC to absorb. After passage of legislation for U.S. conversion to the metric system, the IC should be prepared immediately to take steps toward conversion, but to ease associated problems, especially those of the customer, a period of dual reporting will have to be prescribed.

Conversion to metric units in reports will, of course, cause some initial confusion with many collectors and producers of intelligence. With training for all persons involved, the conversion to metric units should present no major problem but it may be costly in lost man-hours and somewhat expensive. The ability to think in the metric system will take time, however, and the intelligence process will be slowed somewhat during the learning period.

The reporting of intelligence information from clandestine sources should present few problems since much of such reporting is received in metric units. On the other hand, the reporting from the [redacted]

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[redacted] would be considerably more complicated. Most of its reporting is from sources who generally use customary units and who are likely to continue to do so well after the U.S. conversion legislation has been passed. Conversion of customary units to metric for dual unit reporting would present an initial problem for [redacted] but sufficient training and suitable standard conversion charts should make this problem a manageable one. Subsequent conversion to exclusive use of metric units would continue to create certain problems, but these should be marginal if training in dual unit reporting has been adequate.

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The reporting in metric units of such organizations as NSA should present little or no problem. NSA receives most of its raw intelligence information in metric units and thus reporting exclusively in metric units would be considerably simpler than exclusively in customary units or in the presently used system of dual units.

The use of dual units by NPIC, however, caused significant problems and a reduction in efficiency; the use of dual units caused so many problems that it was abandoned recently. Detailed planning for conversion to the dual system and the temporary use of the system should reduce the problems to a manageable level although impaired efficiency is expected. On the

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other hand, the eventual conversion to exclusive use of metric units by NPIC in time would almost certainly improve production efficiency. Because the metric system is used by almost all of the target countries and because much of the instrumentation at NPIC is calibrated in metric units, the efficiency of reporting should increase significantly.

Those components of the IC which produce finished intelligence also will have training problems, especially those components which are not normally involved in scientific and technical matters. Such training would not have to be extensive, though many months and the use of standard conversion tables will be necessary until analysts learn to think easily in metric units. A period of dual reporting by such production units would be highly desirable in order to phase into exclusive use of metric units most easily.

During the dual reporting period it will have to be emphasized that the use of both metric and customary units is a temporary expedient and that in time customary units will be dropped completely. It is expected that the analytical components will have no unmanageable problems either during the interim period of dual reporting or after conversion to the metric system. To assure reasonable consistency in the use of metric units, it is recommended that training be carried out with guidance from the Metric Information Office of the National Bureau of Standards.

All but one of the polled components of the IC endorsed fully the changeover and stated emphatically that the advantages far outweighed the disadvantages. Many of the replies cited as major advantages the ease of handling metric units, the uniformity of units, the elimination of errors caused by conversion of the metric units received to customary units, and the improved interaction with other nations -- most of which use the metric system. The panel agrees with these points. The single negative argument was based on the fact that vast stores of information using only customary units now exist in computer memories, but the panel does not consider the problem to be one of great importance, because the conversion is not extremely difficult even though there will be some initial cost.

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There appear to be no problems of major significance for collectors or producers of intelligence whether producers such as NSA and NPIC or the producers of finished intelligence. The panel identified no component of the IC which should not adopt the metric system. Nor has it identified groups which should avoid using certain parts of the metric system.

The panel advocates use of the convention of units to be set forth as a national standard by the Department of Commerce to assure that the same units are used throughout the IC. Conversion factors for converting from customary to metric units and vice versa to be used during the period of dual reporting should be uniform throughout the IC.

The intent to convert to metric units in intelligence reporting should be stated soon for implementation at a later date. The plan for conversion should be publicized far enough in advance to identify as many problems as possible and to solve them before implementation. Each component can best undertake its own training program, which can include such things as conversion tables, commercially available brochures, familiarization briefings, and formal training courses when required.

The conversion to metric system will not be 100 percent. Certain units of measure are not in the metric system but are accepted internationally. Such units might include barrel/day, nautical mile, knot, troy ounce, bushel, and shaft horsepower. The panel recommends that such exclusions be the same as those to be set forth by the Department of Commerce for national standards.

In sum, the IC should not play the role of pioneer and attempt to implement general conversion today. On the other hand, it should not lag behind the expected program for U.S. conversion. It seems most logical to the panel that the IC should prepare now and be ready to implement the system almost immediately after conversion has become a policy of the U.S.

#### Impact on Customers of the Intelligence Community

Most of the customers of the intelligence community think in customary units rather than metric units. In

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hand, others who do not have such backgrounds feel less comfortable when faced only with metric units. The NPIC program which faltered largely because of poor customer acceptance illustrates this point very well. Such customers should take advantage of training in understanding the metric system, which no doubt will be widely available after the enactment of legislation. During the period of dual reporting, which should remain in effect no longer than 18 months after the U.S. decision to convert to metric reporting, many customers will tend to ignore the metric units and merely read the customary ones. Therefore the fact that dual reporting is temporary will have to be emphasized to encourage attention to the metric units as well. Each component must be especially alert to customer problems and should plan a method of feedback to assure that these problems are known quickly and that reasonable steps are taken to keep them to a minimum.

After conversion to reporting in metric units, a standard conversion chart might be provided as an appendix in each intelligence report in which units are widely used. Such charts would make possible conversion by the reader, but the inconvenience of using it might additionally motivate him to become completely familiar with the metric system. The panel believes that the hardest impact of converting to the metric system may be on some of our highest level consumers. They are the ones who have the least time to be trained in the metric system and who may be the most resistant to conversion. Because the IC must be consumer oriented, certain reports requested specifically by such high-level customers might still have to use dual units. It is hoped that the pressure of a national commitment to the metric system would keep reports of this kind to a minimum.

In sum, the panel feels that the customers of intelligence rather than the collectors or the producers of intelligence, will tend to resist conversion exclusively to metric units. The needs of the customer must be continually assessed and met, but efforts must be made to persuade him to accept eventually metric units only.

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Timing and Transitional Procedure

Those parts of the IC which have not already begun the conversion process should begin together, and the most logical time to do so is almost immediately after the U.S. national commitment to the conversion. Although it is anticipated that legislation will be enacted during this or the next one or two sessions of the Congress, the exact date is unknown. Even with this uncertainty, plans for implementation should be made now by each major IC component to be complete within about 6 months. Such plans should include provisions for training and should address all anticipated problems associated with the conversion. The familiarization and training plan should be implemented by the individual component within the 2-month period following the enactment of legislation and before implementation of the dual reporting period. If the familiarization period is too far in advance of the time when dual reporting is to be used, the momentum build up during the training period may be lost. Dual reporting must be used to provide a transitional period for additional learning by the IC members and their customers. If the period is too short, there will not be ample time for a smooth transition; if it is too long, many persons may not be motivated to learn the metric system well enough to become independent of the dual system. The panel feels that the period of dual reporting should be as short as possible and that a period of 18 months should be the maximum except for unusual cases.

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Appendix A  
USIB-D- 27.8/1  
6 August 1973

U N I T E D      S T A T E S      I N T E L L I G E N C E      B O A R D

MEMORANDUM FOR THE UNITED STATES INTELLIGENCE BOARD

SUBJECT : Intelligence Panel on Community-Wide  
Use of the Metric System of Units

REFERENCE: USIB-D-33.1/28, 17 July 1973

1. As of 3 August the USIB approved the Guided Missile and Astronautics Intelligence Committee (GMAIC) recommendations in the reference document that: (a) USIB endorse in principle a policy that would lead eventually to official community-wide use of the metric system of units and; (b) the Chairman, USIB, appoint a panel representing the technically oriented elements of the intelligence community. The panel will fully investigate the desirability and impact of converting to the metric system for intelligence reporting, determine the optimum transitional procedure and timing, and identify the elements of the community which would be affected initially. It should report its findings and recommendations to the USIB for Board consideration by about 31 October 1973.

2. The Acting Chairman has designated [redacted] as STAT  
Panel Chairman. He also requests that each USIB Principal who wishes to participate nominate a member to represent his organization on the International Metric System Panel.

USIB ACTION REQUESTED

3. Accordingly, each Board Principal who wishes to participate is requested to notify [redacted] (Room 5F19, CIA Headquarters, Code 143 extension [redacted]) of his nominee on the subject panel by close of business 15 August.



Executive Secretary

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APPENDIX B

International Metric System

The metric system was developed in France at the time of the French Revolution. This measurement system was based primarily on the meter, a length defined as a small fraction of the earth's circumference. Since then the system has been refined in many ways. The up-to-date version, on which the nations of the world have agreed, is called *Système International d'Unités*. In this report metric system refers specifically to this version of the metric system. The International Metric System at present is founded on seven base units.

1. The unit of length is the meter.
2. The unit of mass (commonly called weight) is the kilogram.
3. The unit of time is the second.
4. The unit of electric current is the ampere.
5. The unit of temperature is the kelvin (which in common use is translated into the degree Celsius, formerly called centigrade).
6. The unit of luminous intensity is the candela.
7. The unit for amount of substance is the mole.

All other units, such as those for speed and volume, are derived from the base units. Standard prefixes are added to give names for quantities of a particular unit that differ by multiples of 10, e.g., meter (m), kilometer (1,000 m), millimeter (0.001 m).

The customary system is the predominant measurement system used in the U.S. It includes such commonly used units as inch, foot, yard, mile, pint, quart, gallon, bushel, ounce (fluid and avoirdupois), pound, degree Farenheit and, like metric, the ampere, the candela, and the second. Some units of metric and customary measure

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are given below; they are not equivalents, except in the case of time, for which the metric and customary units are identical.

Unit of measure	The metric system	The customary system
Length	millimeter centimeter meter kilometer	inch foot yard mile
Weight	gram kilogram tonne	ounce pound ton
Volume	milliliter liter	ounce cup pint quart gallon
Time	second minute hour day	second minute hour day
Temperature	degree Celsius	degree Farenheit
Speed	kilometer per hour	mile per hour
Pressure	pascal kilopascal	inch of mercury pound per square inch

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APPENDIX C

Record of Activities

The USIB Metric Panel met seven times between 23 August and 28 November 1973. Terms of Reference outlining the panel's approach to the problem were prepared. Mr. Jeffrey V. Odom, National Bureau of Standards, briefed the panel at its first meeting on the status of the plan for conversion to the metric system in the U.S. He also agreed to become a consultant to the panel. [redacted] NPIC, discussed the problems that NPIC encountered during its program to use the metric system in its reporting. (Appendix D)

Letters were sent to 27 U.S. government organizations which are producers of intelligence and consumers of the IC product to solicit views on the advantages and disadvantages of using the metric system for reporting by the IC. Responses to the letters are available upon request.

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Terms of Reference For USIB Metric Panel

Scope: Investigate the desirability and impact of converting to the metric system for intelligence production, determine the optimum transitional procedure and timing, and identify the elements of the community which would be affected initially.

Assumptions: That the intelligence community will at some time adopt the use of the majority of the metric system of units in its production. That the intelligence community will adjust its use of the metric system of units to that of US government agencies which are important consumers of its product.

I. Desirability of Use of the Metric System:

1. Widespread use elsewhere in the world and increasing use in the U.S.
2. Movement of most of the other users of the English system of measure to the metric system
3. Greater ease of computation with the metric system
4. Intelligence target countries employ the metric system, thus reporting units would be identical with object units eliminating the need for conversion and much error in estimation
5. Much of the sophisticated technology used in advanced intelligence collection systems is built on the metric system and produces data in that system
6. Other

II. Disadvantages of the Metric System:

1. Difficulty of "thinking" in the system
2. Cost of conversion of data from English to metric system or dual reporting
3. Change always brings disorganization and surprises
4. Other

III. What will be the impact of the conversion to reporting information in metric units:

1. On the understanding of the reports by major consumers?
2. On the cost of production of intelligence reports?
  - a. Should include additional computation requirement
  - b. Comprehend the delay in production occasioned by trying to express data in drafting
3. On the analyst who must reorient his or her system of reckoning yet sacrifice nothing in volume, analytical effectiveness or accuracy
  - a. Will this mean any change in the numbers of people we shall need to do the intelligence job?

IV. What will be the optimum timing and transitional period for the installation of the use of metric units in intelligence production?

1. Can we accept the proposition in the assumptions that optimum timing would be coincident with other government agencies who are our major consumers?  
-- Is there any experience that would indicate that we might be better off to adopt metric system of measure before general adoption begins elsewhere in the government?

-- After, i.e. lag the adoption elsewhere in the government?

2. What factors will be critical to the transitional period?

-- Several experimenters suggest that the transition period be as short as possible

-- May we not again be constrained by the transition established for government agencies as a whole

V. What elements of the Intelligence Community would be affected initially, subsequently, etc.?

1. Do we seek to begin the use of the metric system of units with collection facilities and personnel or do we begin with analysts and their supervisors so that they may participate in the redefinition of collection requirements?

2. Perhaps in fact it may be desirable to impose the new system simultaneously (or in simultaneous steps) over the community as a whole.

3. Can we identify any reasonably self-constrained units which should not adopt the metric system of units? Which would avoid certain components of the metric system which other units will be adopting?

VI. How important will planning be to the timing and transition to use of metric units?

1. Do we foresee a need for a set of detailed plans to guide us through the transition to a metric system? Will they need to be developed and agreed upon well ahead of their implementation? Will they require the unambiguous endorsement of management before implementation will begin?

2. Should such plans be stratified so that individual elements of the plan are tailored to the activity of participants at each level from the individual collector-analyst-processor to the DCI?

VII. The panel should approach the consumer agencies as well as canvassing its own membership agencies on many of these problems.

1. The approach to the agencies should be at a sufficient level to assure an authoritative, thoughtful response.
2. It should not however seek agency "positions" because of the need for prompt reporting and the difficulty we would have in presenting a sufficient scenario to permit agencies developing a definitive reply.
3. A letter has been prepared to use in this approach and individual members have been assigned specific agency responsibility for coming up with people to whom the letter will be addressed.

VIII. To what extent should the Panel design a plan for the transition to the metric system and what should the end-product of the Panel's deliberations be?

1. A report to the USIB which sets forth our major findings and recommends how to proceed.
2. A report to USIB which sets forth our major findings, recommends how to proceed and presents documentation for a general plan required for implementation.
3. A report to USIB which sets forth our major findings, recommends how to proceed and presents documentation for a detailed plan required for implementation.
4. Other

24 September 1973

MEMORANDUM FOR: See Attached Addressee List

SUBJECT: Use of the Metric System of Units Within  
the Intelligence Community

1. The United States Intelligence Board has recently endorsed in principle a policy that would lead eventually to official use of the metric system of units within the Intelligence Community. Also there is legislation before the Congress which endorses the use of the metric system in the US and establishes general guidelines for long term implementation. All signs indicate that this legislation may well be passed during this session of Congress.

2. In light of the USIB endorsement and the impending legislation, there has been established by USIB a Metric Panel which will as one of its duties investigate the desirability and impact of converting to the metric system of units for intelligence reporting. The Panel will carefully look into the advantages and disadvantages of the use of the metric system to the production components of the Intelligence Community and to the consumers both within and outside of the Community.

3. If intelligence reporting in the future should be converted to the metric system, metric units alone might be used or some form of dual reporting at least for an interim period. No doubt certain English units would remain even with an otherwise all metric system.

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SUBJECT: Use of the Metric System of Units Within  
the Intelligence Community

4. The purpose of this memorandum is to seek from your organization preliminary and informal comments on the significant advantages and disadvantages which conversion to the metric system for intelligence reporting would have on your organization. We are also interested in your opinion on the most desirable length of a conversion period as well as any other comments you or others in your organization may wish to make. We are not seeking an official response but are interested in ideas and thoughts you have on the potential effect on your organization as either a producer or consumer of intelligence reporting. Of course, the responses we receive will have a major impact on the report of the Metric Panel to USIB which is due on or about 31 October.

5. In order that we have your response in time to consider it carefully prior to the final report, I would appreciate receiving your thoughts no later than 15 October.



Chairman  
USIB Metric Panel

Please send responses to:

STAT

[Redacted Address Line]  
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APPENDIX D

NPIC's Experience in Converting to the Metric System

BRIEFING OUTLINE

- I. Introduction
- II. Brief history of NPIC's transition from customary to metric units (June to August 1969)
  - \* -Rationale for conversion
  - Cart-before-the-horse planning
- III. Metric usage confusion (August to September 1969)
  - Customer resistance
  - Interface with rest of Intelligence Community
- IV. Metric customary phased transition (September to October 1969)
- V. Preparation of metric customary reporting guidelines (October to March 1970)
  - Confusion
- VI. NPIC metric customary reporting (October 1969 to July 1973)
  - \* -Problems encountered with dual reporting system
- VII. Transition from metric customary back to customary with metric option
- VIII. \*Results of NPIC PI/Customer preference survey
- IX. \*Conversion implementation suggestions (NPIC viewpoint)

\*Briefing notes attached

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Rationale for Conversion to Metric System (20 August 1969)

-Objects measured and/or reported on are constructed in Metric units.

-Metric units were more compatible with the Ground Resolution capability of System Photography.

-In rounding off numbers, there was less error when dimensions were expressed in metric units.

-National Installation and Object Data Base files were in their formative stage.

-Metric units are easier for photogrammetrist to work with (i.e., divisible by 10).

-Foreign literature - Metric units

-Forerunner for rest of Intelligence Community

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## Problems Encountered with Dual Reporting System

-Metric customary units are not compatible with one another.

Round-off errors are always present when converting from one system to another.

$$\begin{array}{rcl} \text{Example:} & 2.9 \text{ meters} & = 9.51' \quad (10') \\ & 2.8 \text{ meters} & = \underline{9.18'} \quad (9') \\ \text{Difference} & .1 \text{ meter} & \quad (1') \end{array}$$

-Photogrammetry Division - - - - - PI

## Prime Measurements - Metric units

## Secondary Measurements - Customary units

-Photo interpreter - - - - - Customer

In the majority of cases, customary units were considered prime measurements.

### -Errors encountered in:

### Round off

## Conversion from one system to another

## Dimensional accumulation

-Customary units -- "Crutch" units

-PI reporting -- Increased time and bulk with dual system

- Incompatible with other Intelligence Community reporting methods

-Accuracy statements were given in Metric units only

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NPIC PI/Customer Preferences

-Approximately 70% of those NPIC PIs who use mensuration data prefer to work with English units.

-Approximately 20% prefer Metric units.

-Remaining 10% feel comfortable using either system.

-Approximately 70% to 75% of NPIC customers prefer customary units.

-Metric/customary preferences are sharply divided along functional intelligence responsibilities.

Example: Communication/Electronics - Metrics  
Nuclear - Metric 70% Customary 30%  
Missile and Space - Customary  
Industrial - Customary  
Ground Order of Battle - Customary

-NPIC PIs are currently responding to customers preferences.

-NPIC's current reporting system flexible to change.  
Not locked into any one system.

-95% of NPIC PIs in favor of eliminating dual Metric/Customary usage.

-PIs prefer sharp transition as opposed to phased transition.

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Conversion Implementation Suggestions

-Intelligence Community directive to include:

    Conversion Objectives

    Time Schedules

    Responsible Authority (Governing Body)

    Involved Organizations

-Organizational Impact Study if required - (To be completed as outlined in directive)

-Policy guidelines compilation by various intelligence organizations performing similar functions

-Suggested lead time -

    Six months - Minimum  
    One year   - Maximum

-Suggested phase in conversion - (3 months)  
(Auxiliary crutch methods)

-Follow-on adjustments procedures

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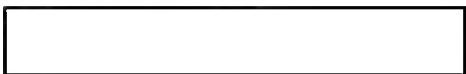
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APPENDIX E

USIB Metric Panel Members and Consultant

Chairman

25X1



Members

Lawrence L. Fisher, Air Force

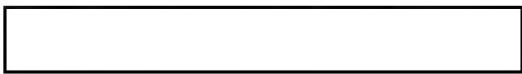
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APPENDIX F

Key References

1. Report to the Congress - A Metric America, National Bureau of Standards (US), Special Publication 345, July 1971.
2. Report of the DOD Metric Study by the DOD Metric Steering Committee, January 1971.

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